

Application No.: 10/645,493

Docket No.: YOR920000758
20140-00304-US1**REMARKS**

Claims 1-36 are now in the application. Claims 17-36 are directed to the elected invention. Claims 1-16 are drawn to non-elected invention and may be cancelled by the Examiner upon the allowance of the claims directed to the elected invention.

Claims 17-19, 21-23, 28, 33 and 36 were rejected under 35 USC 102(b) as being anticipated by U.S. Patent 6,283,829 to Molnar. Molnar fails to anticipate the above claims. The present application is concerned with improving the topological selectivity of regular polishing pads which are used in conjunction with an abrasive slurry as contrasted to using a fixed abrasive finishing element or pad. According to the present invention, friction that develops during polishing between a polishing pad and a wafer is reduced by incorporating solid lubricant particles in the polishing pad. The present invention makes possible increasing the topological selectivity of the planarizing/polishing. The present invention also makes possible the reduction of wafer delamination (peeling) due to planarization/polishing, which is particularly important in planarizing conductor lines embedded in low-k (i.e. low dielectric constant) insulators or porous low-k insulators or planarizing the insulators themselves.

Molnar fails to anticipate the present invention since, among other things, Molnar does not disclose polishing pads that consists essentially of the polymeric matrix and solid lubricant particles. The present claims in reciting "consists essentially of" exclude the presence of materials such as abrasive particles in amounts that would materially change the basic characteristics of the claimed invention. See MPEP 2111.03. In particular, Molnar does not explicitly or inherently disclose a polishing pad that consists essentially of the polymeric matrix and solid lubricant particles. It should be noted that the pads used in the present invention are fundamentally different from those pads of the prior art that have fixed abrasive therein. For instance, see US Patent 5,958,794 to Bruxount (copy previously submitted) that discusses differences between fixed abrasive articles as contrasted to having the abrasives in the slurry.

The discussion in Molnar at column 29, lines 8-11 relied upon in the Office Action to support the conclusion of inherency has been taken somewhat out of context. In particular, this discussion in Molnar actually refers to the situation when the abrasive and lubricant are each in a finishing composition (e.g. - slurry) not in a finishing element (e.g. - pad). To properly understand, the

Application No.: 10/645,493

Docket No.: YOR920000758
20140-00304-US1

discussion at column 29, lines 8-11, it is essential to take into account the discussion beginning at column 28, line 62 which states as follows:

Supplying lubricants in a fluid finishing composition generally offers improved control of lubrication at the operative finishing interface. Both the concentration and the feed rate of the lubricant can be controlled. If the lubricants are supplied in a first finishing composition free of abrasives and abrasives are supplied in a second finishing composition, then the lubricants, preferably organic lubricants, can be controlled separately and independently from any supplied abrasive. If the lubricants are supplied in a first finishing composition free of abrasives and abrasives are supplied in the finishing element finishing surface, then the lubricants, preferably lubricants, can be again controlled separately and independently from any supplied abrasive. Supplying lubricant separately and independently of the abrasive to the operative finishing interface is preferred because this improves finishing control.

There is no disclosure of a finishing element of the type employed according to the present invention.

Furthermore, Molnar suggests using either solid or liquid lubricants. Accordingly, to arrive at the present invention one would have to make fortuitous selections among a myriad of possibilities.

Furthermore, Molnar is actually concerned with a friction detector and method for semiconductor wafers and not with new innovative polishing pads. Accordingly, the discussion of Molnar related to finishing elements needs to be read with the understanding that the discussion merely relates to already known polishing pads and techniques. Molnar should not be read with the hindsight of the knowledge of the present invention.

It seems apparent that if Molnar had discovered the use of a polishing pad that deviated from the prior art such would have been explicitly disclosed therein. For instance, see US Patent 6,390,890 to Molnar (a later Molnar patent and cited in a prior Office Action) which is concerned with a finishing element.

Molnar fails to anticipate the present invention. In particular, anticipation requires the disclosure, in a prior art reference, of each and every recitation as set forth in the claims. See *Titanium Metals Corp. v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 1 USPQ2d 1081 (Fed. Cir. 1986), and *Akzo N.V. v. U.S. International Trade Commissioner*, 1 USPQ2d 1241 (Fed. Cir. 1986). Each and every claim recitation must be

Application No.: 10/645,493

Docket No.: YOR920000758
20140-00304-US1

considered. *See Pac-Tec, Inc. v. Amerace Corp.* 14 USPQ2d 1871 (Fed. Cir. 1990) cert denied 502 US808 1991.

There must be no difference between the claimed invention and reference disclosure for an anticipation rejection under 35 U.S.C. 102. *See Scripps Clinic and Research Foundation v. Genetech, Inc.* 18 USPQ2d 1001 (CAFC 1991) and *Studiengesellschaft Kohle GmbH v. Dart Industries*, 220 USPQ 841 (CAFC 1984).

The law is well settled that claiming of a more specific combination within a broader group of possibilities avoids a lack of novelty rejection. The test for anticipation is whether the claims read on the prior art disclosure, not on what the references broadly teach.

For example, see *Akzo N.V. v. U.S. International Trade Commissioner* 1 USPQ2d 1241 (Fed. Cir. 1986). In *Akzo*, the court found that no anticipation exists when one would have had to "randomly pick and choose among a number of different polyamides, a plurality of solvents and a range of inherent viscosities" to reach the claimed invention.

Also see *In re Kollman et al.* 201 USPQ 193 (CCPA-1979) wherein the court held that the prior art generic disclosure contains "no suggestion of the required FENAC/diphenyl ether ratio".

In Rem-Cru Titanium v. Watson 112 USPQ 88 (D.D.C-1956), the prior art showed alloys having broad ranges which included the claimed ranges. However, the prior art did not explicitly disclose the more limited claimed ranges or alloys having the characteristics of the claimed alloy. Accordingly, the court held the claims to be allowable. For a similar factual pattern and same holding, please see *Becket v. Coe* (CA, Dc 1938) 38 USPQ2d and *Tarak v. Watson* (DC-DC 1954) 103 USPQ 78.

Claim 20 was rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,390,890 to Molnar in view of U.S. Patent 5,714,700 to Nishida. Nishida does not overcome the above discussed deficiencies of Molnar with respect to rendering unpatentable the present invention. Nishida was merely relied upon for disclosure of lubricant particles being spherical or of platelet form. Accordingly, claim 20 is patentable for at least those reasons as to why claim 17 is patentable.

Claims 24-26 were rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,390,890 to Molnar in view of U.S. Patent 4,555,250 to Horie. Horie does not overcome the above discussed deficiencies of Molnar with respect to rendering unpatentable the present invention. Horie

Application No.: 10/645,493

Docket No.: YOR920000758
20140-00304-US1

was relied upon for disclosure of using 1-5% by weight of a solid lubricant. However, Horie is not even properly combinable with Molnar since, among other things, Horie relates to glass grinding sheets from powdery metal compositions and not from polymer compositions. In addition claims 24-26 are patentable for at least those reasons as to why claim 17 is patentable.

Claims 27 was rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,390,890 to Molnar in view of U.S. Patent 6,194,357 to Murata. Murata does not overcome the above discussed deficiencies of Molnar with respect to rendering unpatentable the present invention. Murata was merely relied upon for disclosure of using a surfactant in a water-borne lubricant in order to disperse a solid lubricant in the water. Accordingly, claim 27 is patentable for at least those reasons as to why claim 17 is patentable.

Claim 29 was rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,390,890 to Molnar in view of U.S. Patent 6,045,435 to Bajaj. Bajaj does not overcome the above discussed deficiencies of Molnar with respect to rendering unpatentable the present invention. Bajaj was merely relied upon for disclosure of polyurethane pads comprising microporous urethane. Accordingly, claim 29 is patentable for at least those reasons as to why claim 17 is patentable.

Claims 30 and 31 were rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,390,890 to Molnar in view of U.S. Patent 5,489,233 to Cook. Cook does not overcome the above discussed deficiencies of Molnar with respect to rendering unpatentable the present invention. Cook was merely relied upon for suggesting non-porous polishing pads. Accordingly, claims 30 and 31 are patentable for at least those reasons as to why claim 17 is patentable.

Claim 32 was rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,390,890 to Molnar in view of U.S. Patent 6,136,757 to Chiddick. Chiddick does not overcome the above discussed deficiencies of Molnar with respect to rendering unpatentable the present invention. Chiddick was relied upon for disclosure of adding a binding aid to bind solid lubricants to metallic surfaces. Chiddick is not even properly combinable with Molnar since, among other things, Chiddick does not relate to polymeric compositions. Also, claim 32 is patentable for at least those reasons as to why claim 17 is patentable.

Claims 34 and 35 were rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,283,829 to Molnar in view of US Patent 6,390,890 to Molnar. US Patent 6,390,890 to

Application No.: 10/645,493

Docket No.: YOR920000758
20140-00304-US1

Molnar does not overcome the above discussed deficiencies of US Patent 6,283,829 to Molnar with respect to rendering unpatentable the present invention. Molnar was merely relied upon for a disclosure of polishing low-k porous dielectric wafers and that the polymers and doped oxides are low-k dielectric materials.

In fact, if anything, Molnar teaches away from the present invention since US Patent 6,390,890 relates specifically to finishing elements and requires the abrasive to be fixed in the finishing element. Accordingly, claims 34 and 35 are patentable for at least those reasons as to why claim 17 is patentable.

The mere fact that cited art may be modified in the manner suggested by the Examiner does not make this modification obvious, unless the cited art suggest the desirability of the modification. No such suggestion appears in the cited art in this matter. The Examiner's attention is kindly directed to *In re Lee* 61 USPQ2d 1430 (Fed. Cir. 2002) *In re Dembiczak et al.* 50 USPQ2d 1614 (Fed. Cir. 1999), *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984), *In re Laskowski*, 10 USPQ2d. 1397 (Fed. Cir. 1989) and *In re Fritch*, 23, USPQ2d. 1780 (Fed. Cir. 1992).

In *Dembiczak et al.*, supra, the Court at 1617 stated: "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. See, e.g., *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d. 1340, 1352, 48 USPQ2d. 1225, 1232 (Fed. Cir. 1998) (describing 'teaching or suggestion motivation [to combine]' as in 'essential evidentiary component of an obviousness holding'), *In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d. 1453, 1459 (Fed. Cir. 1998) ('the Board must identify specifically...the reasons one of ordinary skill in the art would have been motivated to select the references and combine them');..."

Also, the cited art lacks the necessary direction or incentive to those of ordinary skill in the art to render the rejection under 35 USC 103 sustainable. The cited art fails to provide the cited degree of predictability of success of achieving the properties attainable by the present invention needed to sustain a rejection under 35 USC 103. See *Diversitech Corp. v. Century Steps, Inc.* 7 USPQ2d 1315 (Fed. Cir. 1988), *In re Mercier*, 185 USPQ 774 (CCPA 1975) and *In re Naylor*, 152 USPQ 106 (CCPA 1966).

Application No.: 10/645,493

Docket No.: YOR920000758
20140-00304-US1

Moreover, the properties of the subject matter and improvements which are inherent in the claimed subject matter and disclosed in the specification are to be considered when evaluating the question of obviousness under 35 USC 103. See *Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 USPQ2d. 1923 (Fed. Cir. 1990), *In re Antonie*, 195, USPQ 6 (CCPA 1977), *In re Estes*, 164 USPQ (CCPA 1970), and *In re Papesch*, 137 USPQ 43 (CCPA 1963).

No property can be ignored in determining patentability and comparing the claimed invention to the cited art. Along these lines, see *In re Papesch*, supra, *In re Burt et al*, 148 USPQ 548 (CCPA 1966), *In re Ward*, 141 USPQ 227 (CCPA 1964), and *In re Cescon*, 177 USPQ 264 (CCPA 1973).

In view of the above, reconsideration and allowance are, therefore, respectively solicited.

In the event that the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned attorney is available at the telephone number noted below. Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 50-0510, under Order No. 20140-00304-US1 from which the undersigned is authorized to draw.

Dated: 8-3-05

Respectfully submitted,

By 

Burton A. Amernick

Registration No.: 24,852

CONNOLLY BOVE LODGE & HUTZ LLP

1990 M Street, N.W., Suite 800

Washington, DC 20036-3425

(202) 331-7111

(202) 293-6229 (Fax)

Attorney for Applicant